FIG. 1

PRIOR ART

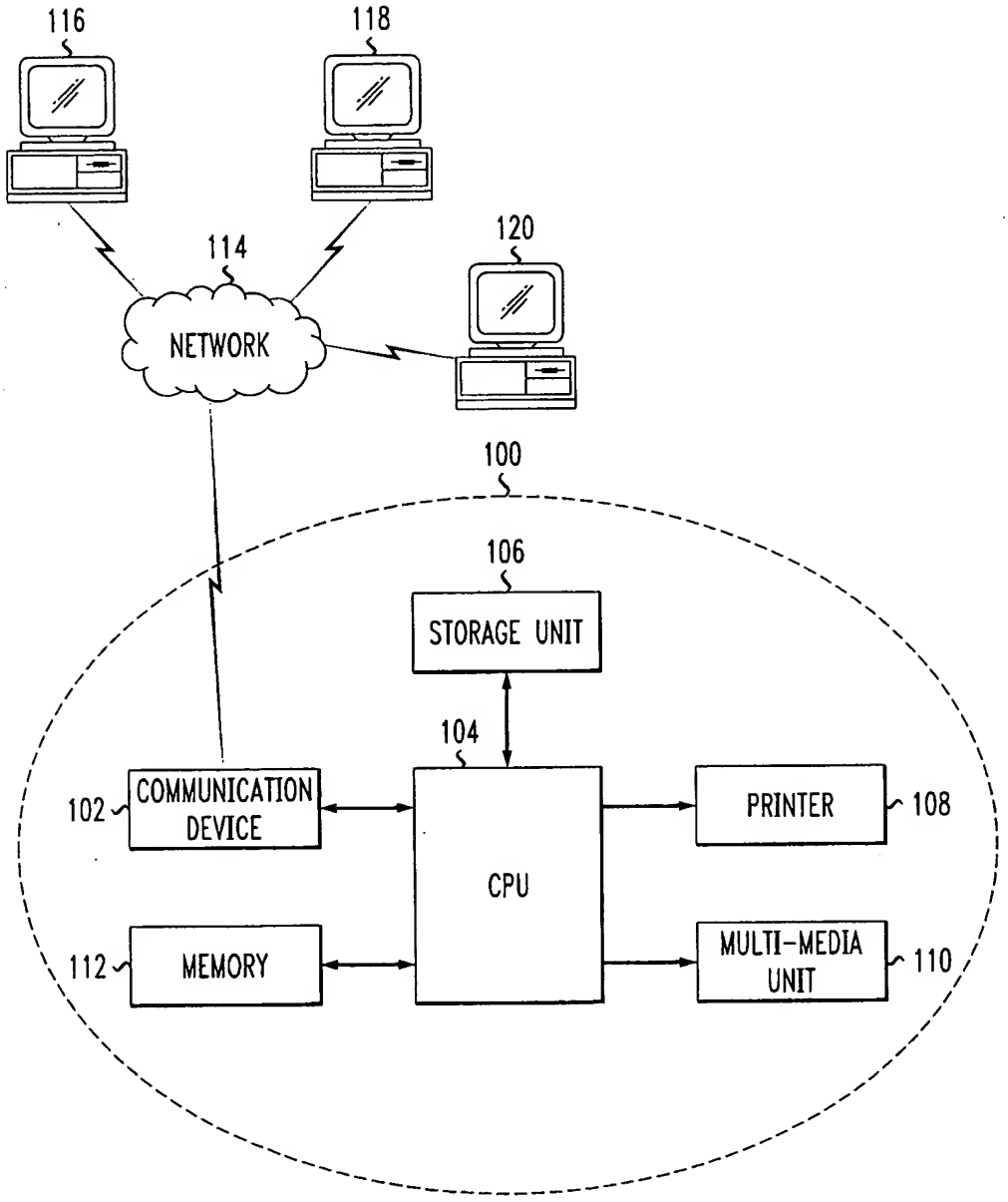


FIG. 2A
PRIOR ART

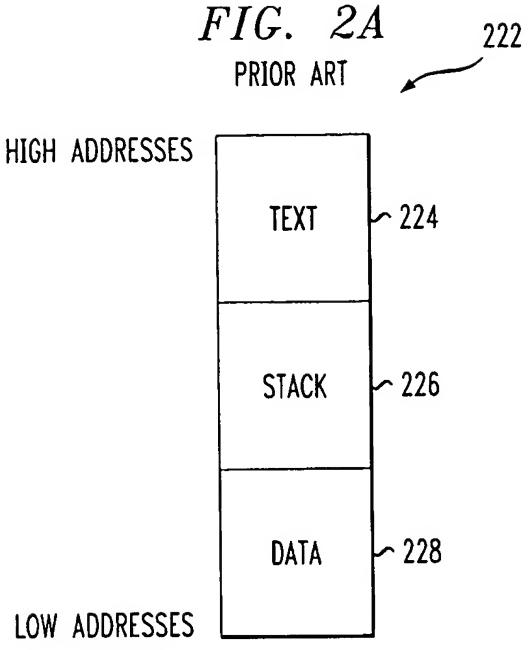


FIG. 2B
PRIOR ART

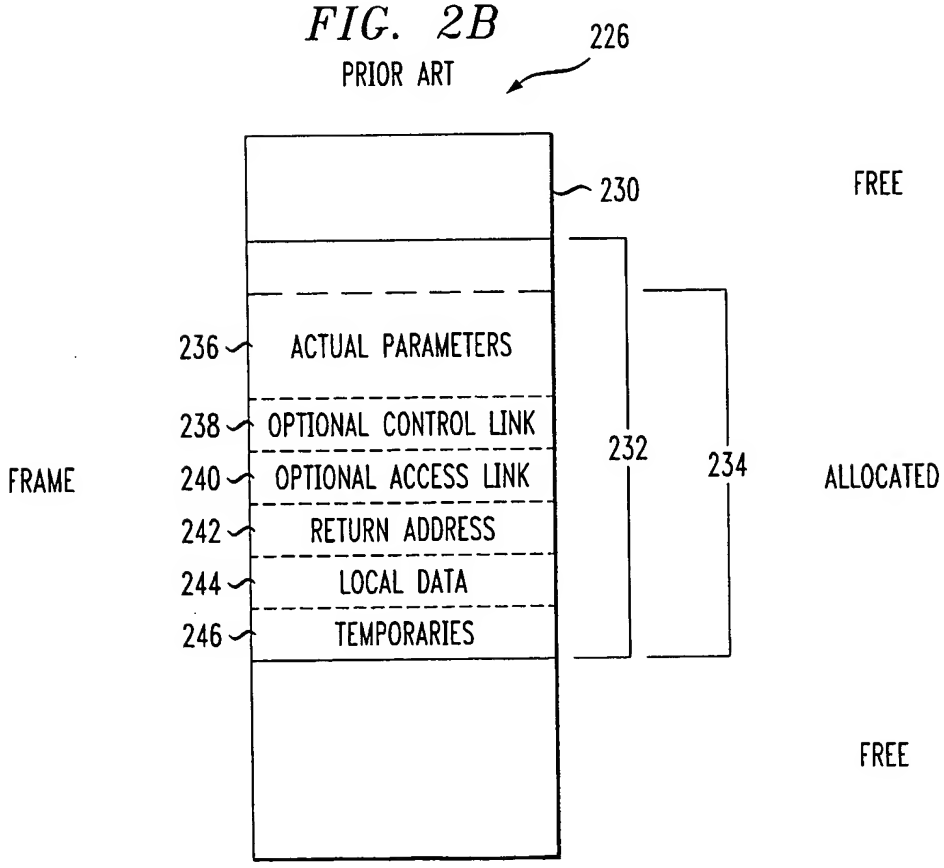


FIG. 3

PRIOR ART

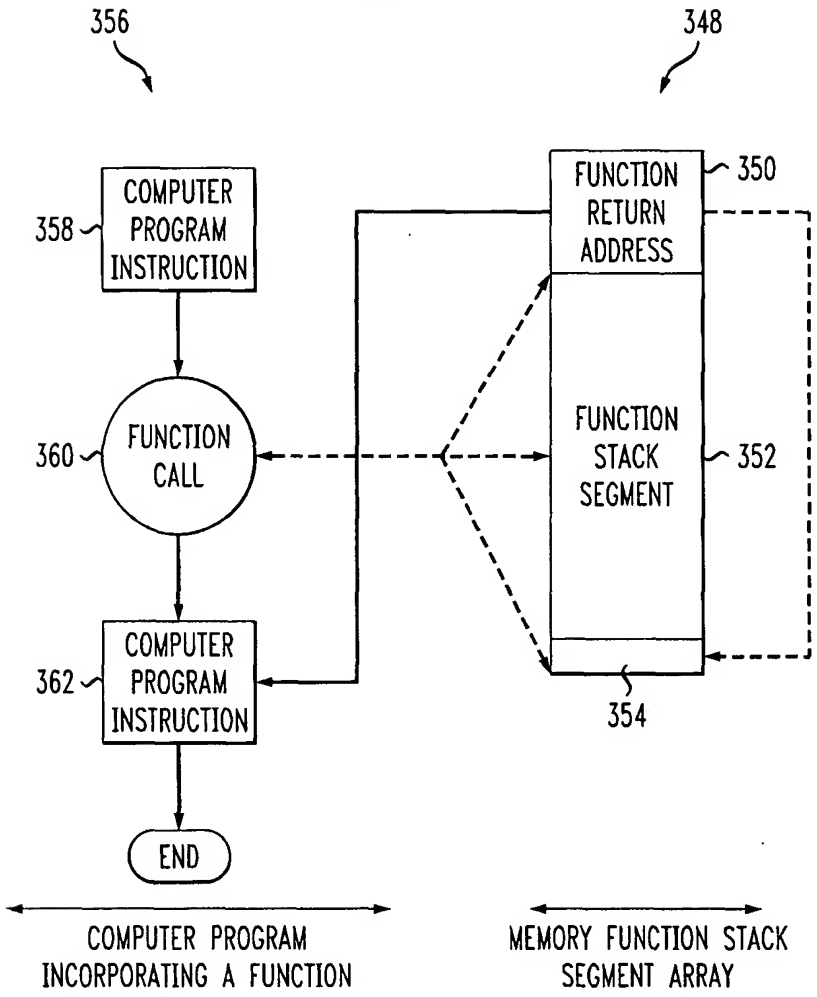


FIG. 4

PRIOR ART

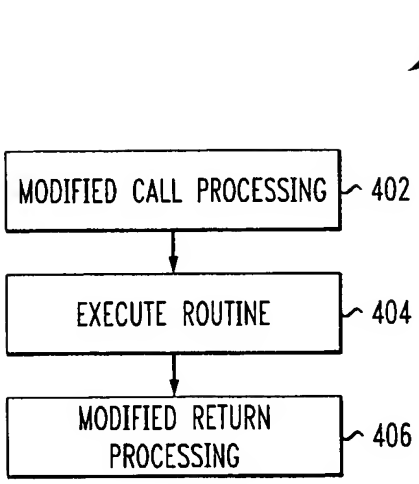


FIG. 5

PRIOR ART

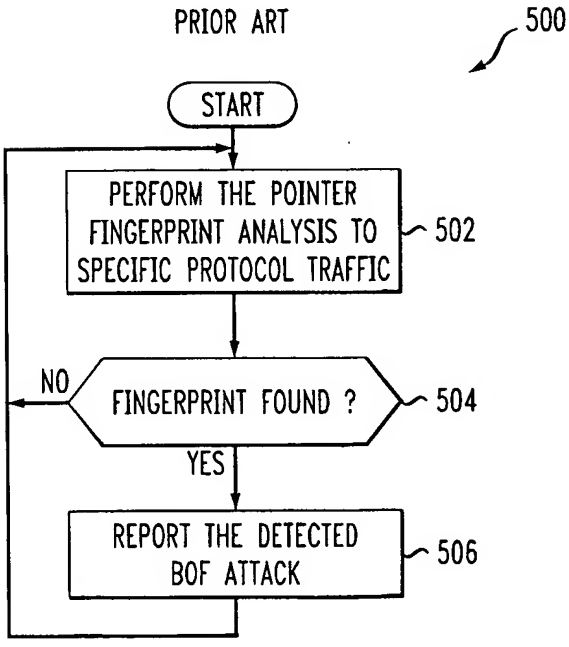


FIG. 6

PRIOR ART

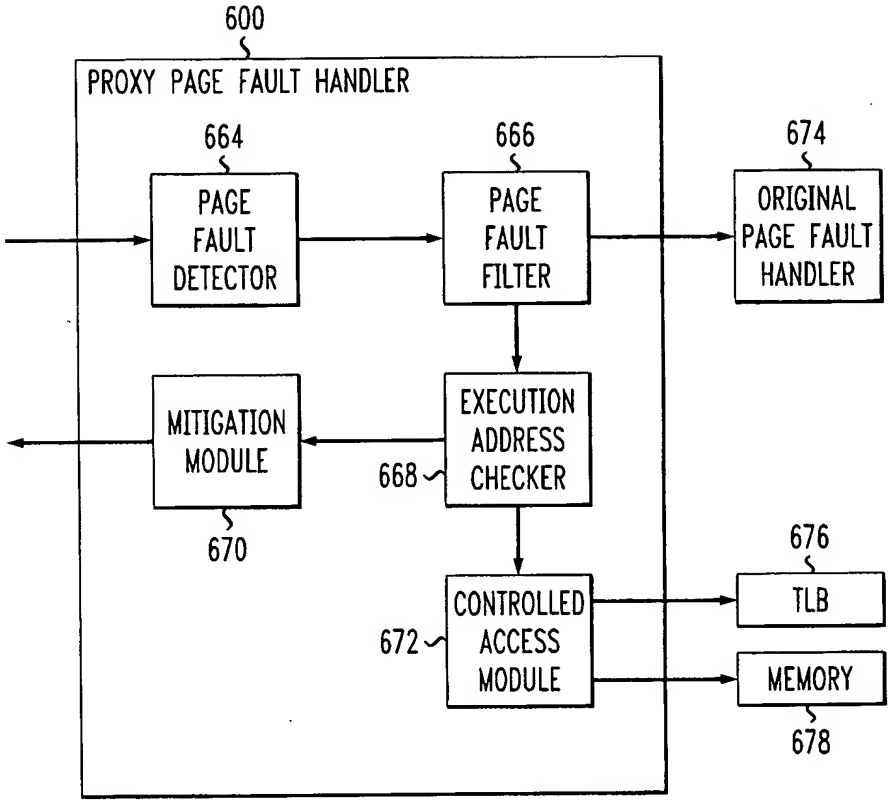


FIG. 7

PRIOR ART

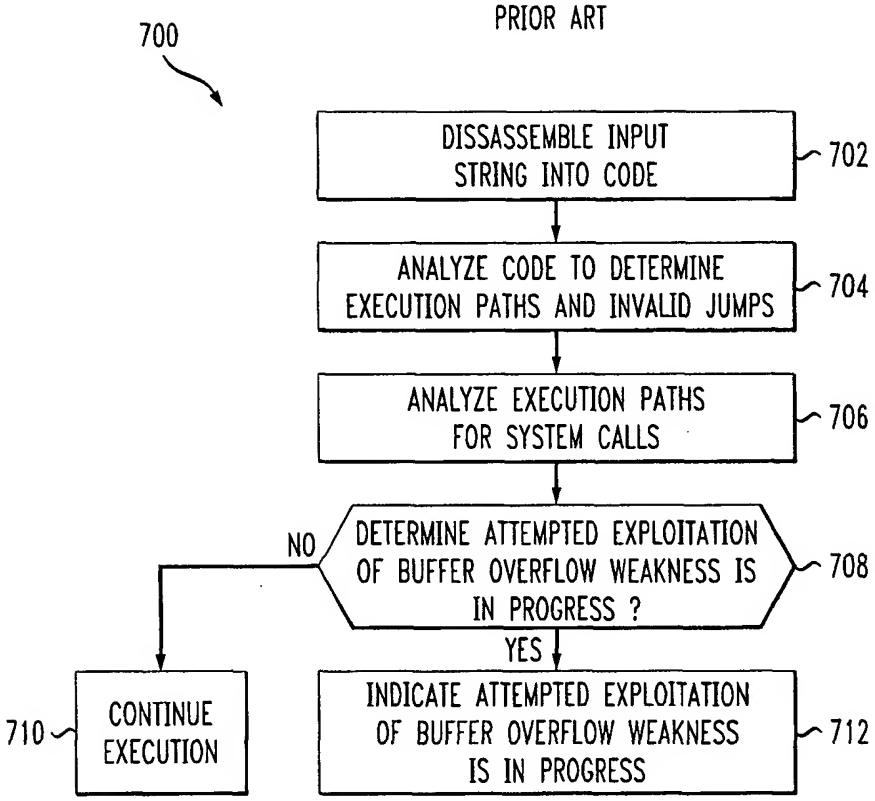


FIG. 8

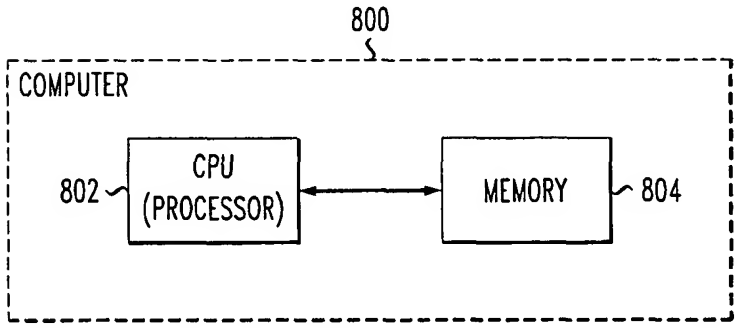


FIG. 9

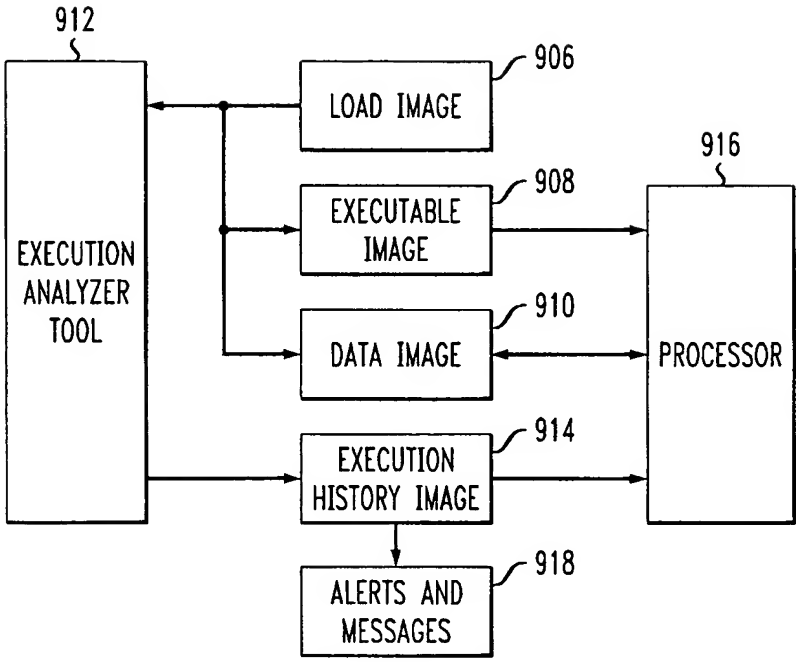

912
EXECUTION ANALYZER TOOL
906
LOAD IMAGE
908
EXECUTABLE IMAGE
910
DATA IMAGE
914
EXECUTION HISTORY IMAGE
918
ALERTS AND MESSAGES
916
PROCESSOR

FIG. 10

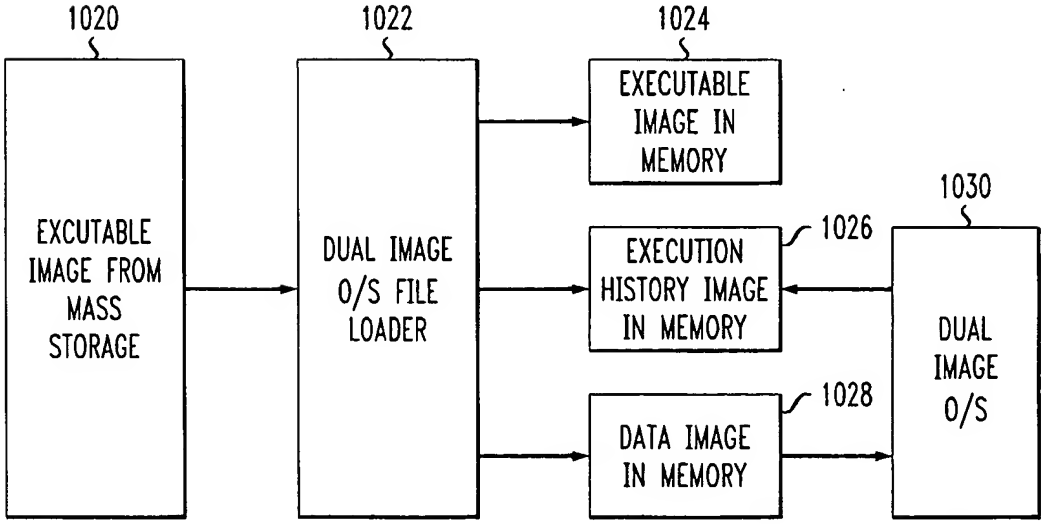

1020
EXCUTABLE IMAGE FROM MASS STORAGE
1022
DUAL IMAGE O/S FILE LOADER
1024
EXECUTABLE IMAGE IN MEMORY
1026
EXECUTION HISTORY IMAGE IN MEMORY
1028
DATA IMAGE IN MEMORY
1030
DUAL IMAGE O/S

FIG. 11

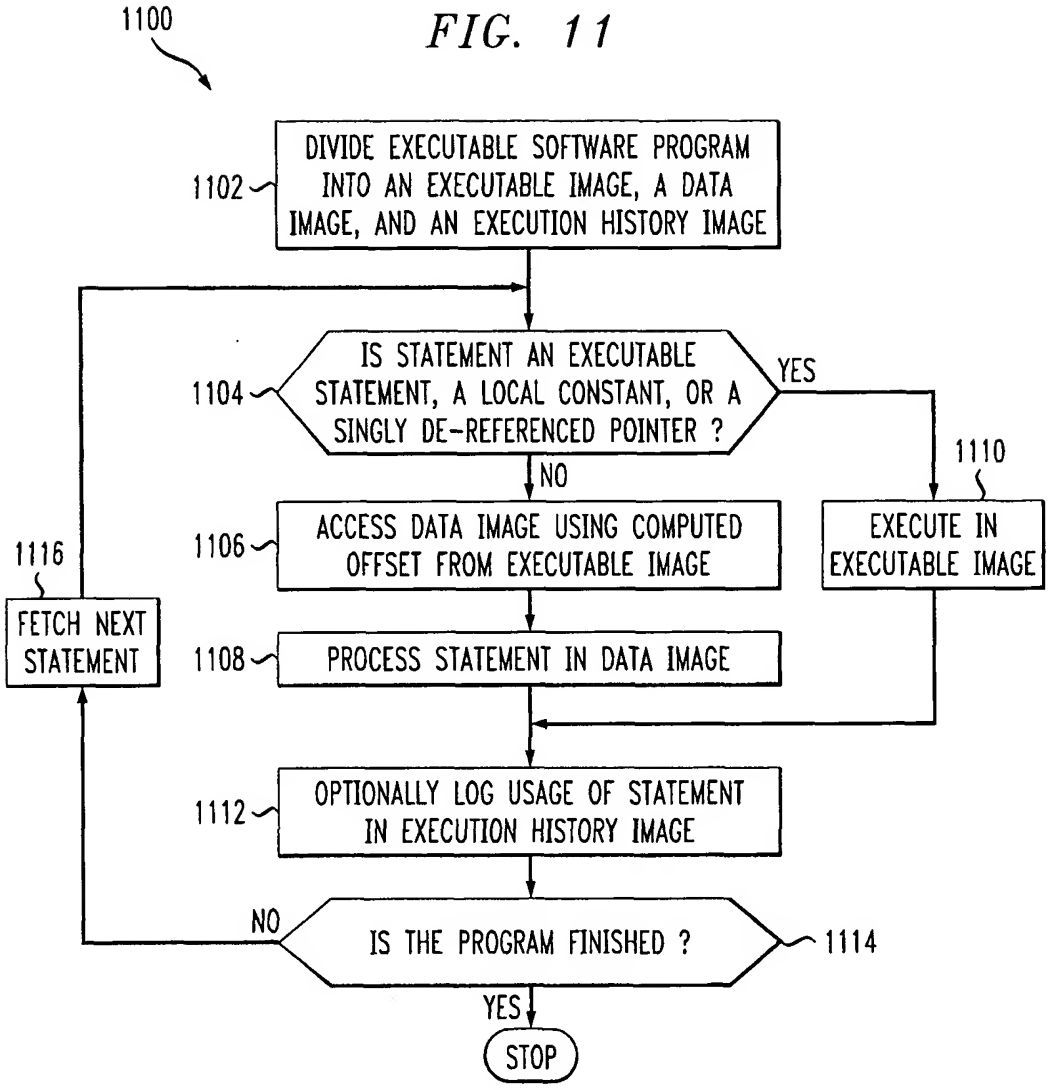
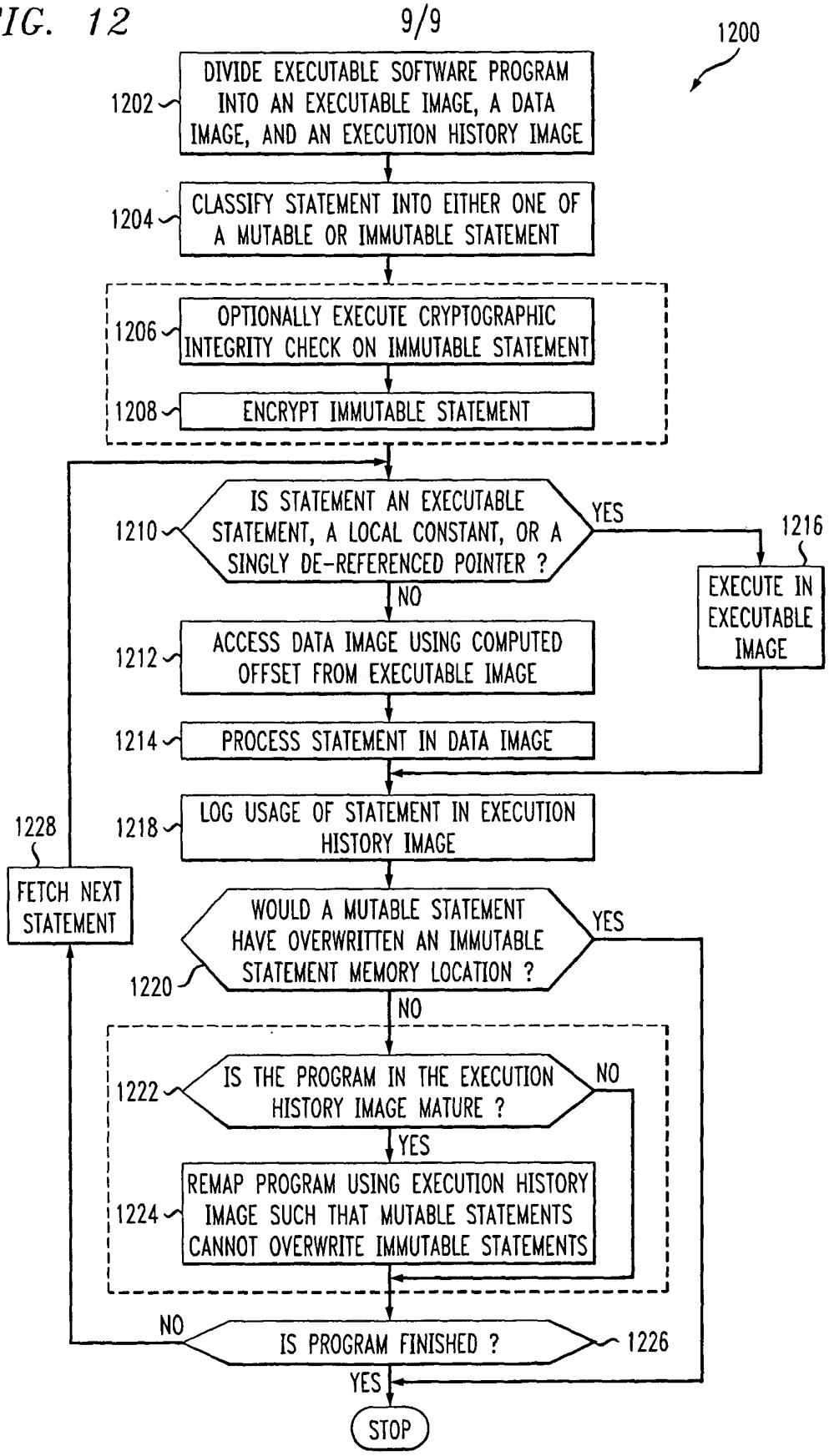

1100
DIVIDE EXECUTABLE SOFTWARE PROGRAM INTO AN EXECUTABLE IMAGE, A DATA IMAGE, AND AN EXECUTION HISTORY IMAGE
1102
IS STATEMENT AN EXECUTABLE STATEMENT, A LOCAL CONSTANT, OR A SINGLY DE-REFERENCED POINTER ?
1104
YES
NO
1110
EXECUTE IN EXECUTABLE IMAGE
ACCESS DATA IMAGE USING COMPUTED OFFSET FROM EXECUTABLE IMAGE
1106
1116
FETCH NEXT STATEMENT
PROCESS STATEMENT IN DATA IMAGE
1108
OPTIONALLY LOG USAGE OF STATEMENT IN EXECUTION HISTORY IMAGE
1112
NO
IS THE PROGRAM FINISHED ?
1114
YES
STOP

FIG. 12


1200
1202
DIVIDE EXECUTABLE SOFTWARE PROGRAM INTO AN EXECUTABLE IMAGE, A DATA IMAGE, AND AN EXECUTION HISTORY IMAGE
1204
CLASSIFY STATEMENT INTO EITHER ONE OF A MUTABLE OR IMMUTABLE STATEMENT
1206
OPTIONALLY EXECUTE CRYPTOGRAPHIC INTEGRITY CHECK ON IMMUTABLE STATEMENT
1208
ENCRYPT IMMUTABLE STATEMENT
1210
IS STATEMENT AN EXECUTABLE STATEMENT, A LOCAL CONSTANT, OR A SINGLY DE-REFERENCED POINTER ?
YES
1216
EXECUTE IN EXECUTABLE IMAGE
NO
1212
ACCESS DATA IMAGE USING COMPUTED OFFSET FROM EXECUTABLE IMAGE
1214
PROCESS STATEMENT IN DATA IMAGE
1218
LOG USAGE OF STATEMENT IN EXECUTION HISTORY IMAGE
1228
FETCH NEXT STATEMENT
1220
WOULD A MUTABLE STATEMENT HAVE OVERWRITTEN AN IMMUTABLE STATEMENT MEMORY LOCATION ?
YES
NO
1222
IS THE PROGRAM IN THE EXECUTION HISTORY IMAGE MATURE ?
NO
YES
1224
REMAP PROGRAM USING EXECUTION HISTORY IMAGE SUCH THAT MUTABLE STATEMENTS CANNOT OVERWRITE IMMUTABLE STATEMENTS
NO
IS PROGRAM FINISHED ?
1226
YES
STOP